

CROSSROADS
ASIA PACIFIC



KUALA LUMPUR
MALAYSIA
20-22 OCTOBER 2015

Plantation Intelligence® **Analysis of Commercial Data for Yield** **and Fertilizer Management in Oil Palm**

OBERTHÜR, Thomas

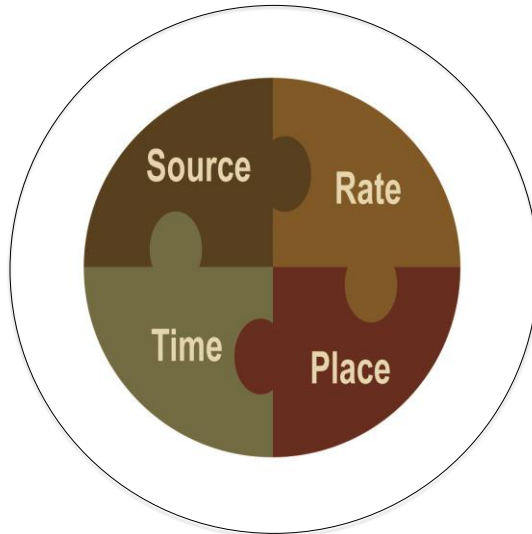
Director South East Asia Program, International Plant Nutrition Institute



1 Conceptual Background

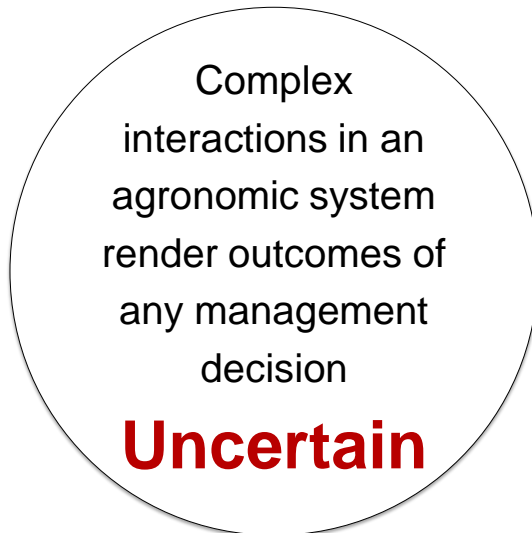


IPNI 4R Nutrient Stewardship



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Decision Making Uncertainty



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Decision Making Uncertainty

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METRIC
Uncertainty about rate & placement of fertilizer to support a yield target

TRANSLATIONAL
Uncertainty from external factors that reduce fertilizer performance, e.g. harvest, mill and transport efficiency

Example:
ROI in Fertilizer

TEMPORAL
Uncertainty about timing of fertilizer applications, e.g. drought interference

STRUCTURAL
Uncertainty from internal factors that influence fertilizer efficiency, e.g. EFB applications

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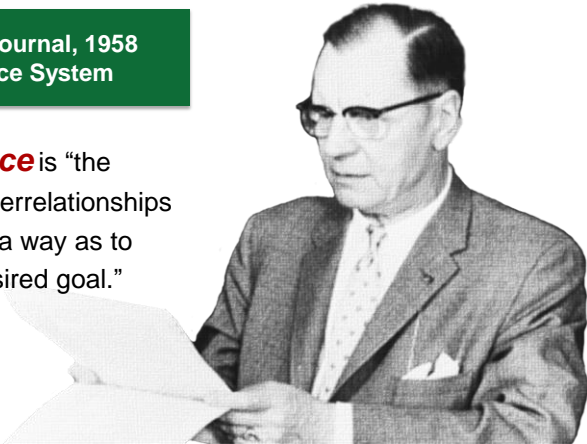
Cook et al. *Better Crops* 97, 17 - 20 (2013)

Business Intelligence

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Hans Peter Luhn, IBM Journal, 1958
A Business Intelligence System

(business) intelligence is “the ability to apprehend the interrelationships of presented facts in such a way as to guide action towards a desired goal.”

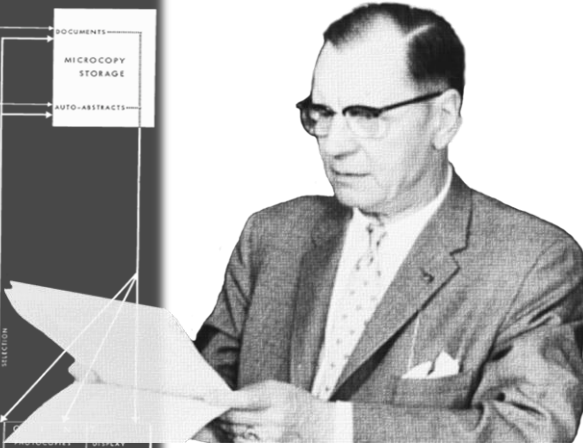
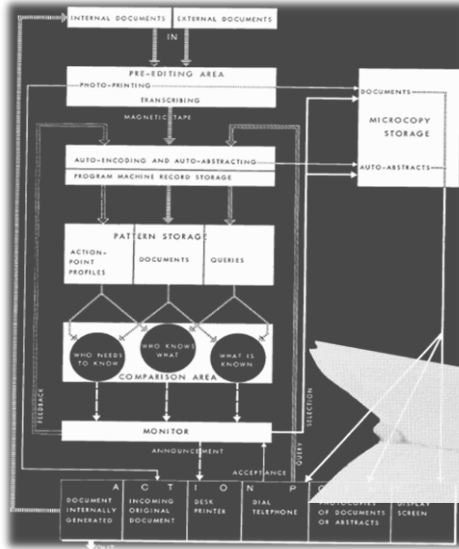


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Business Intelligence



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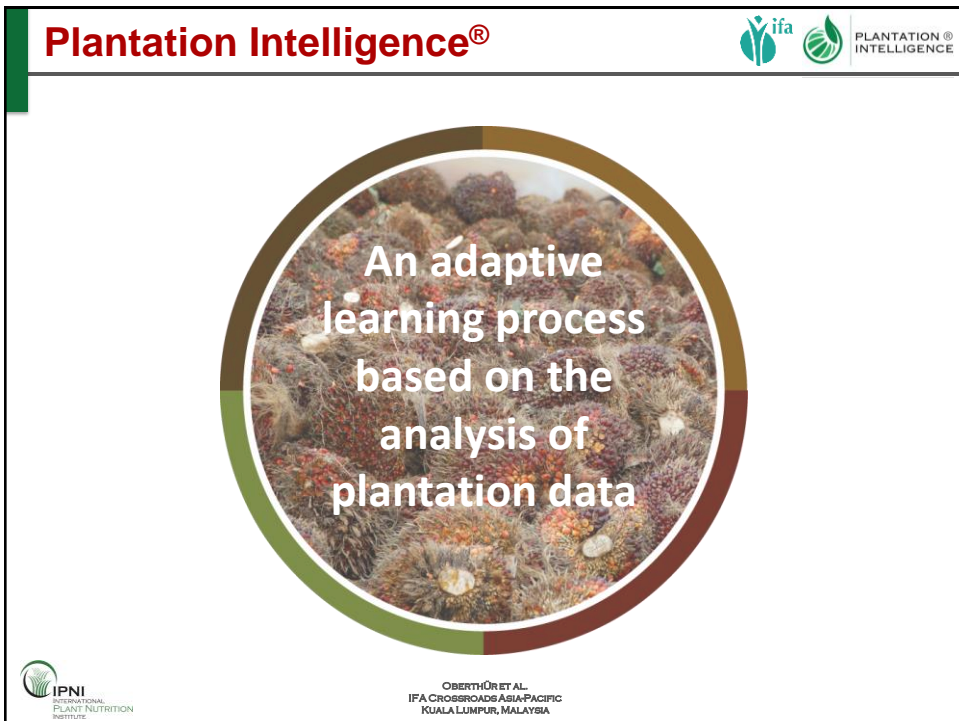
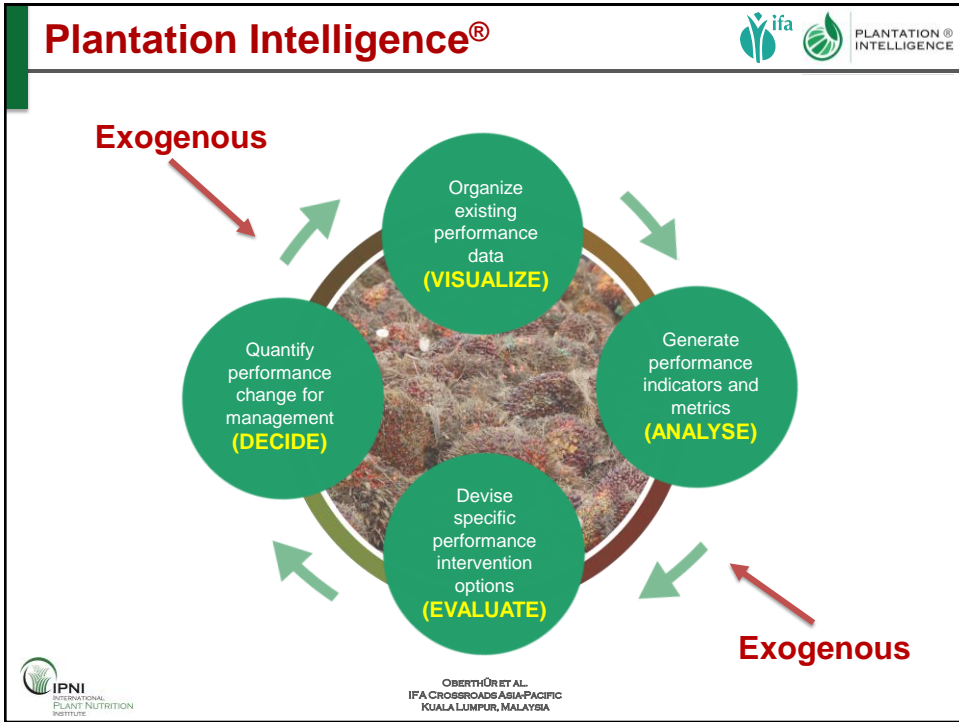
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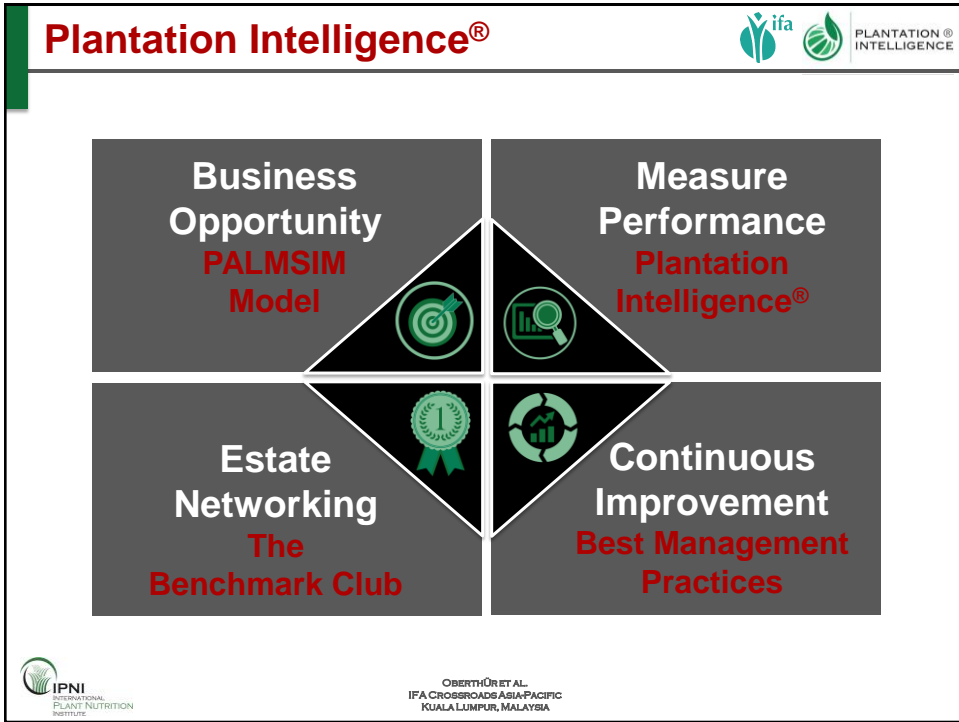


System is Monitored
in Extraordinary Detail



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2 Application Examples

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Current Protocols


7




Yield Age Profiling




Yield Trends




Naïve Gross Margins




Yield Soil Interactions




Yield Soil Climate Interactions



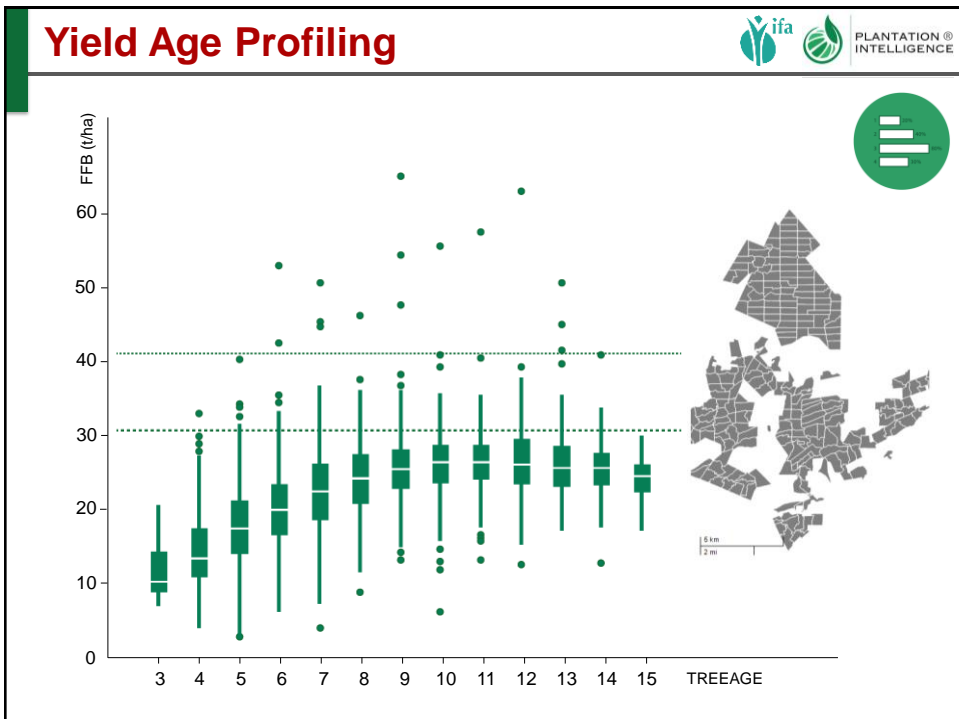
Yield Labor Interactions

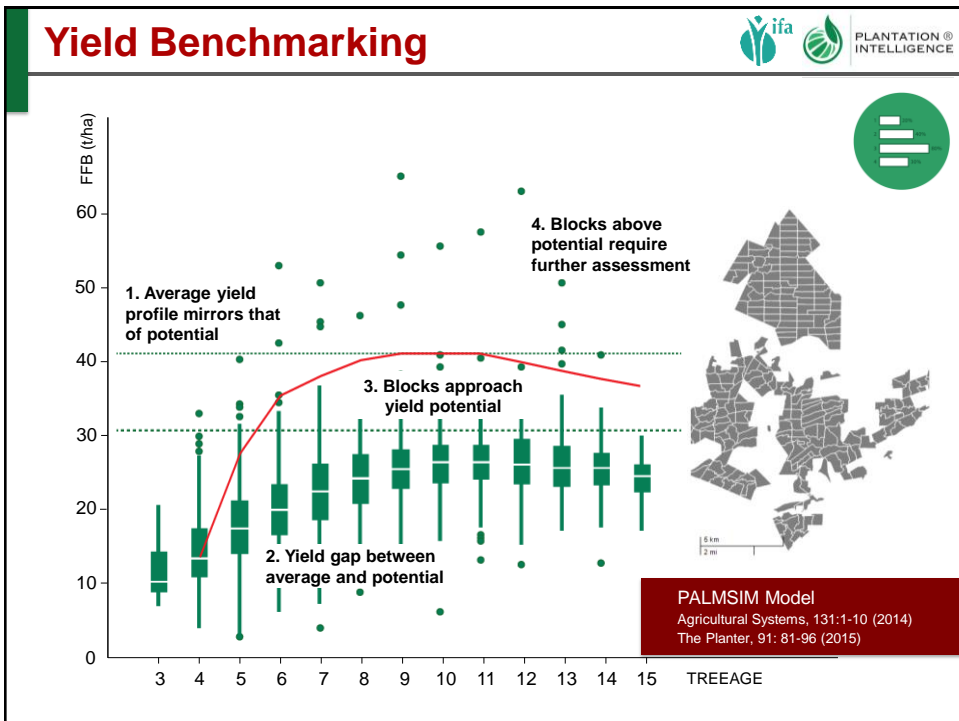
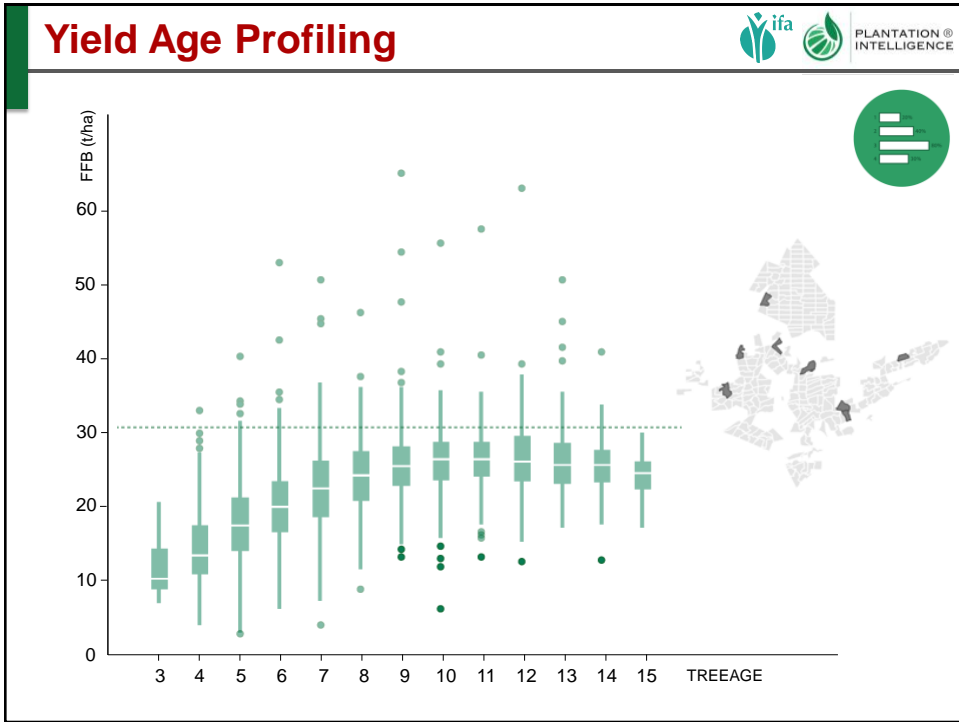


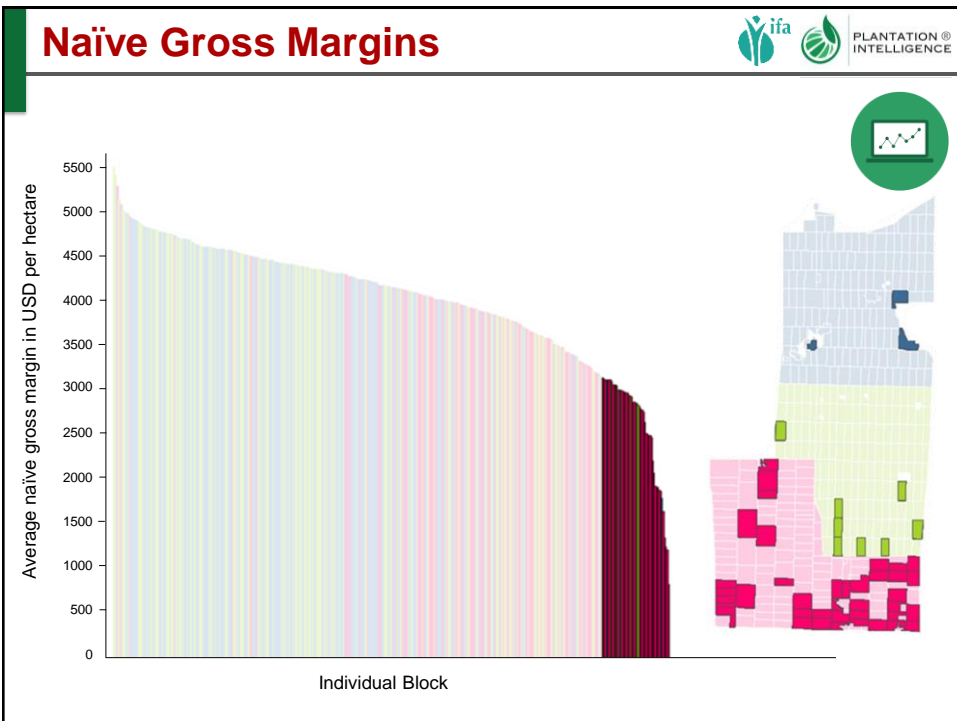
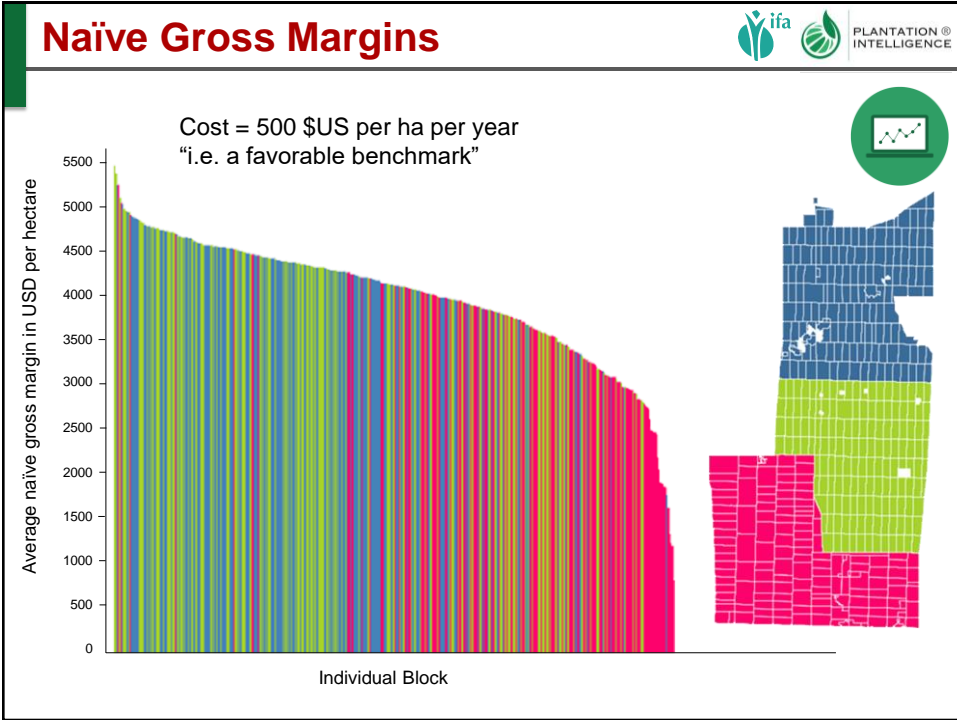
Fertilizer Response Analyses

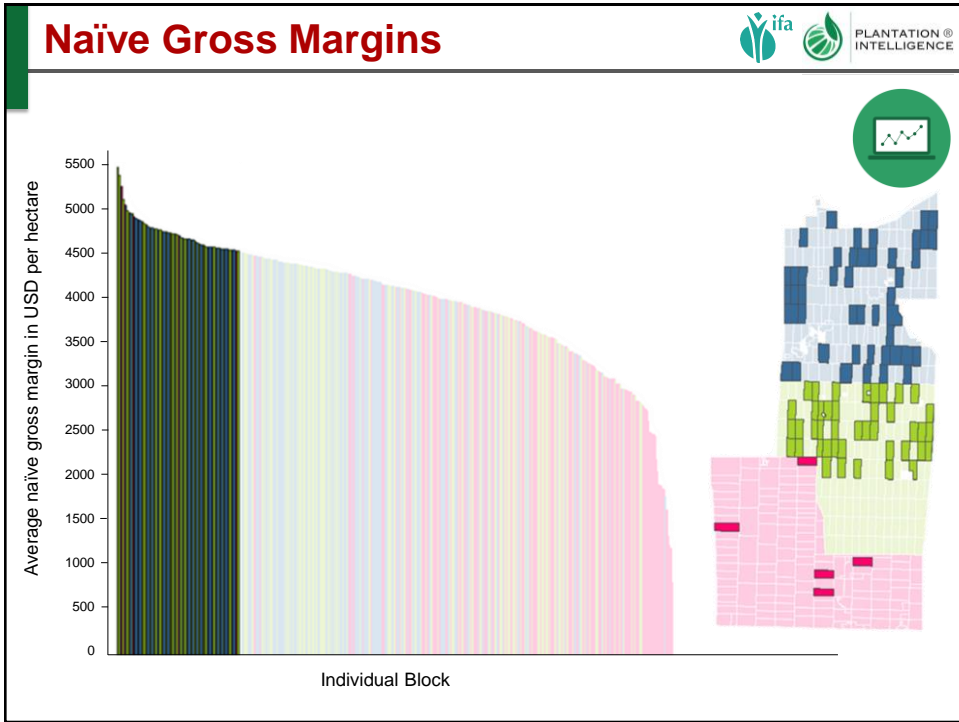


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3 Response to Fertilizer

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Return on Investment




NPKMg

BREAK-EVEN

point





8~10 fresh fruit
kg kg bunches per kg nutrients



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Return on Investment



NPKMg

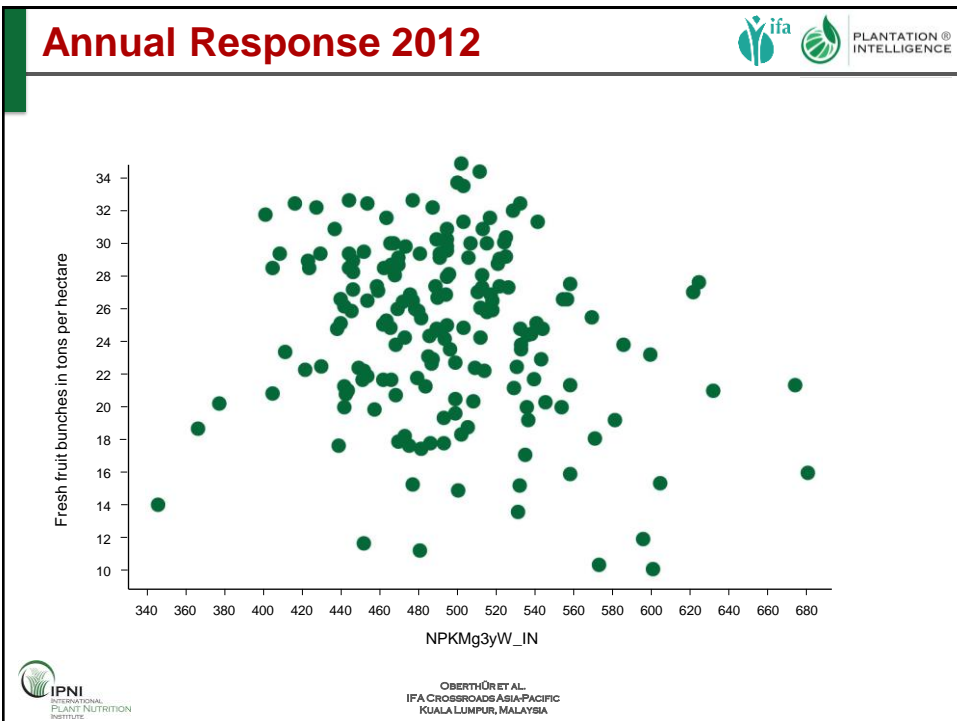
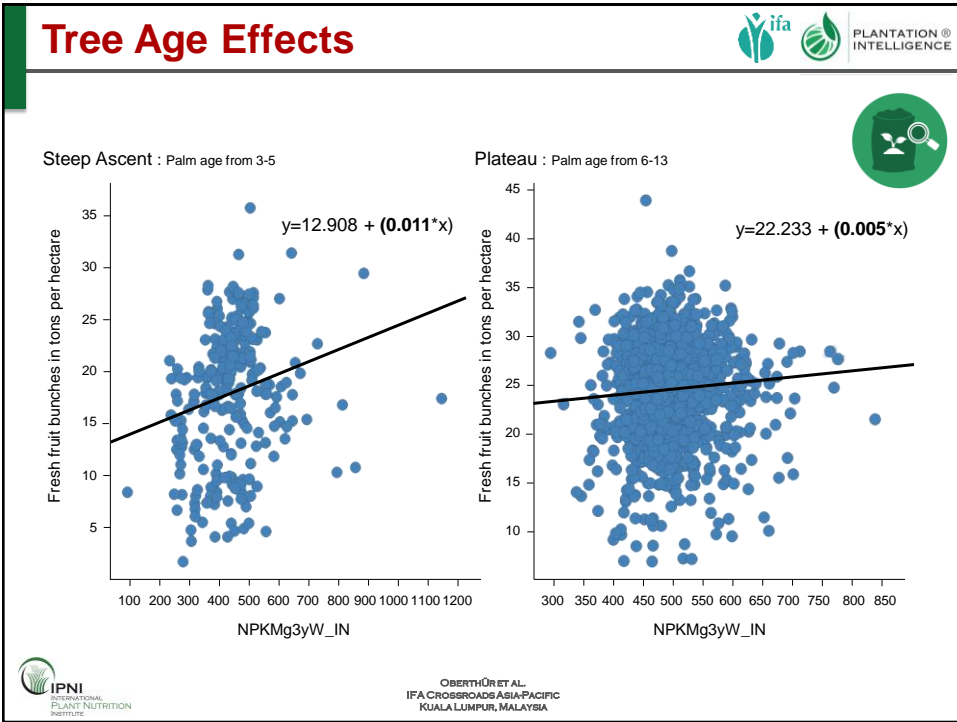
Sum of NPKMg

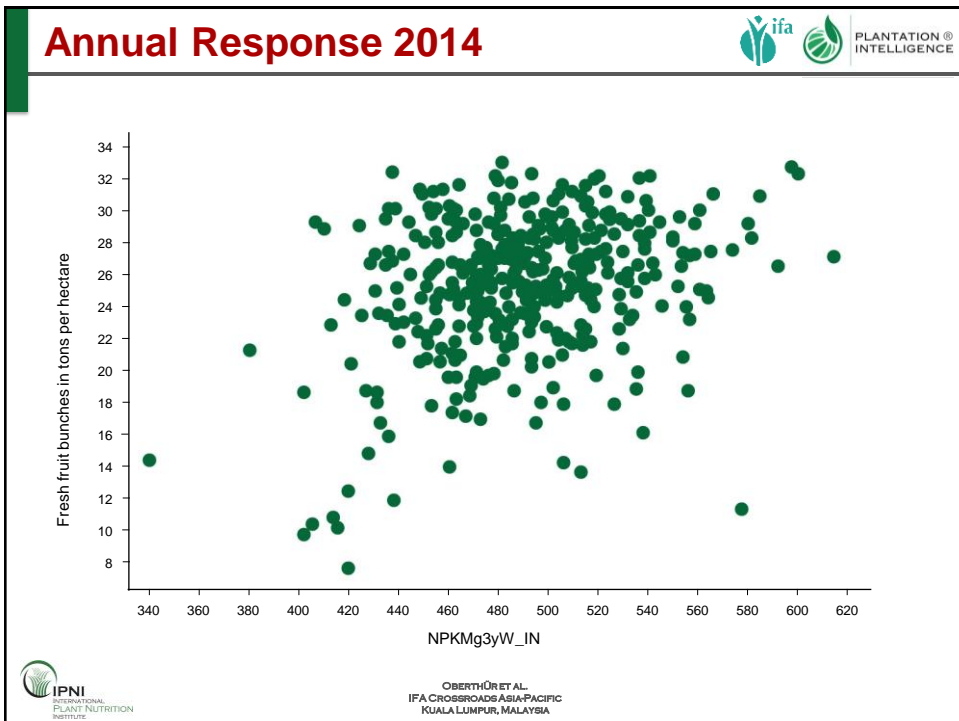
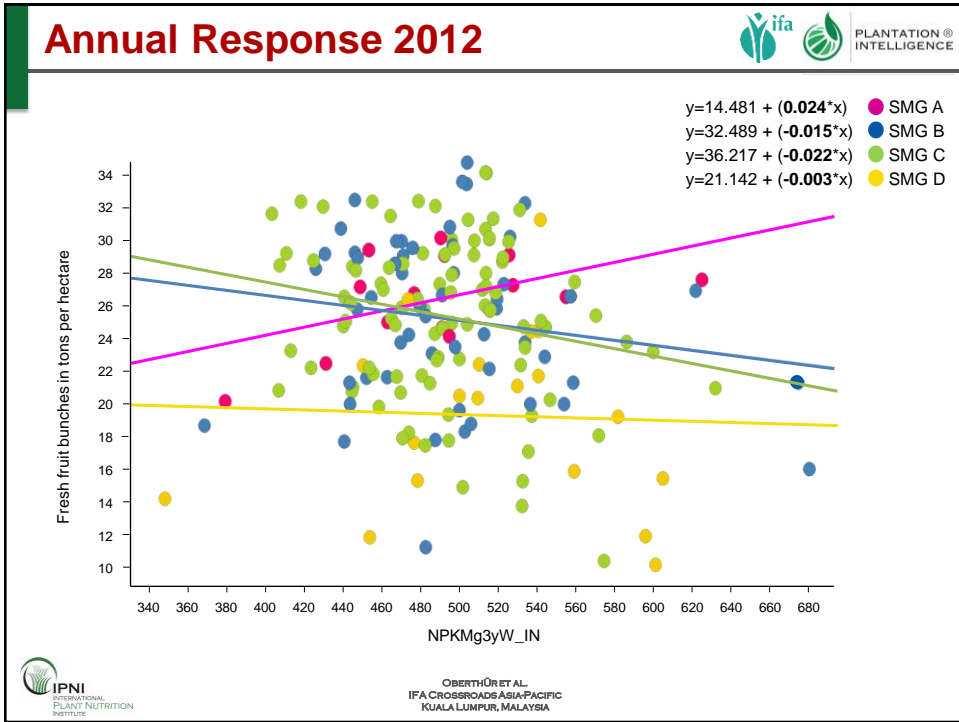
2.5 years to 0.5 year before harvest

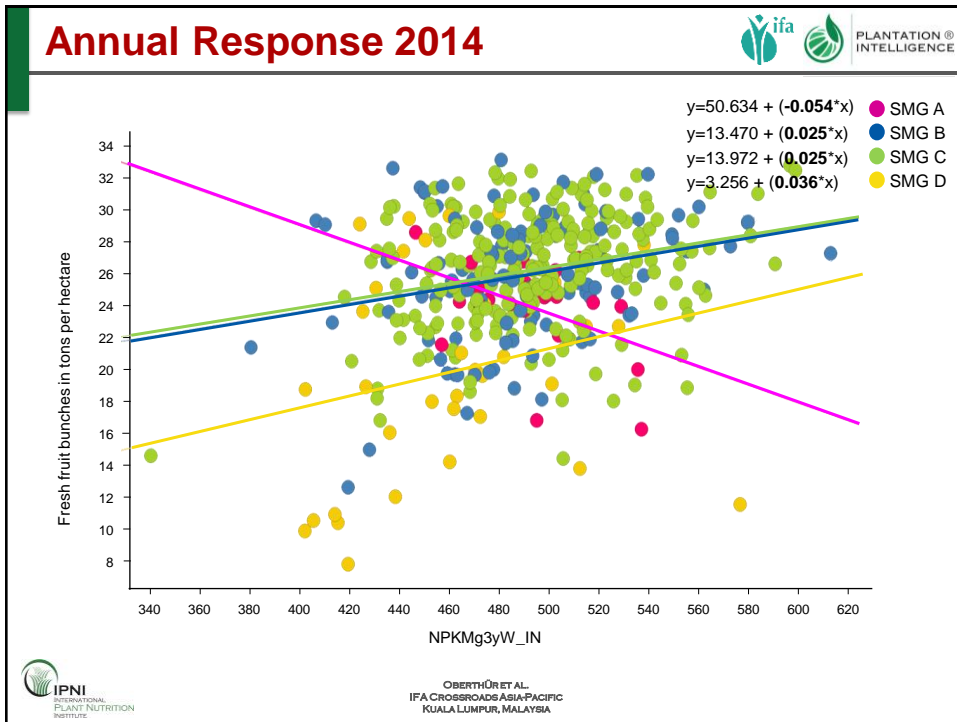


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Visualizing Local Response

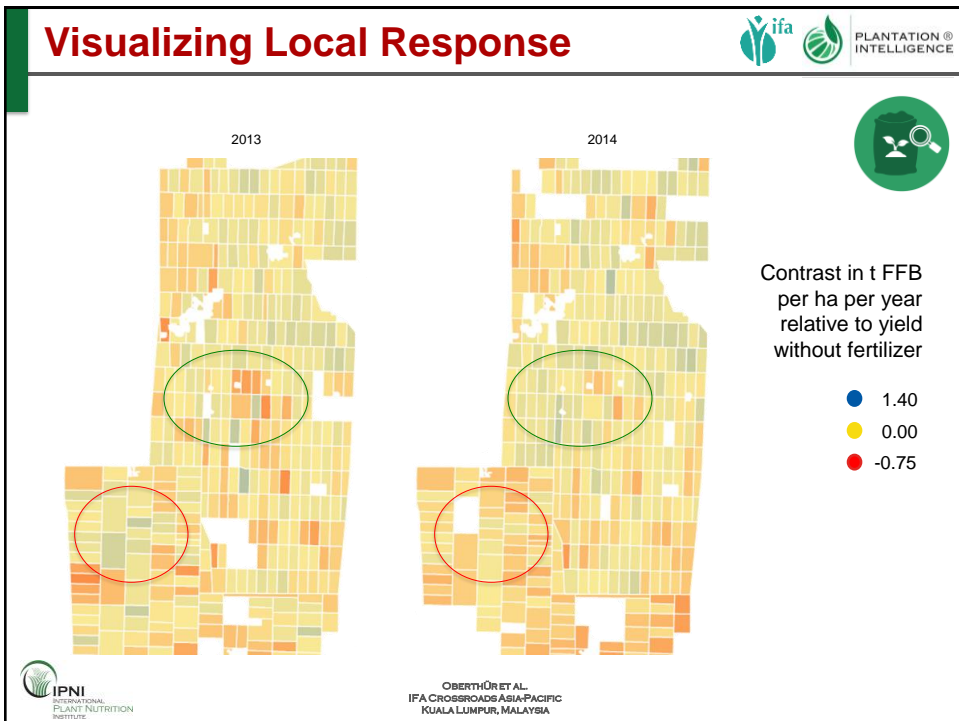
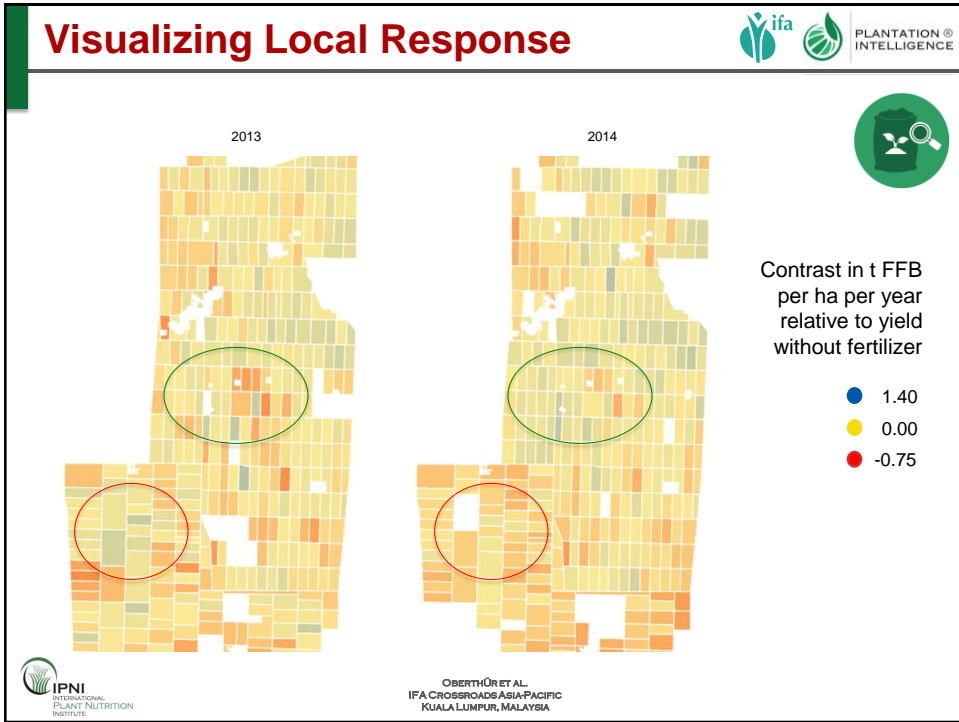


‘Contrast Method’

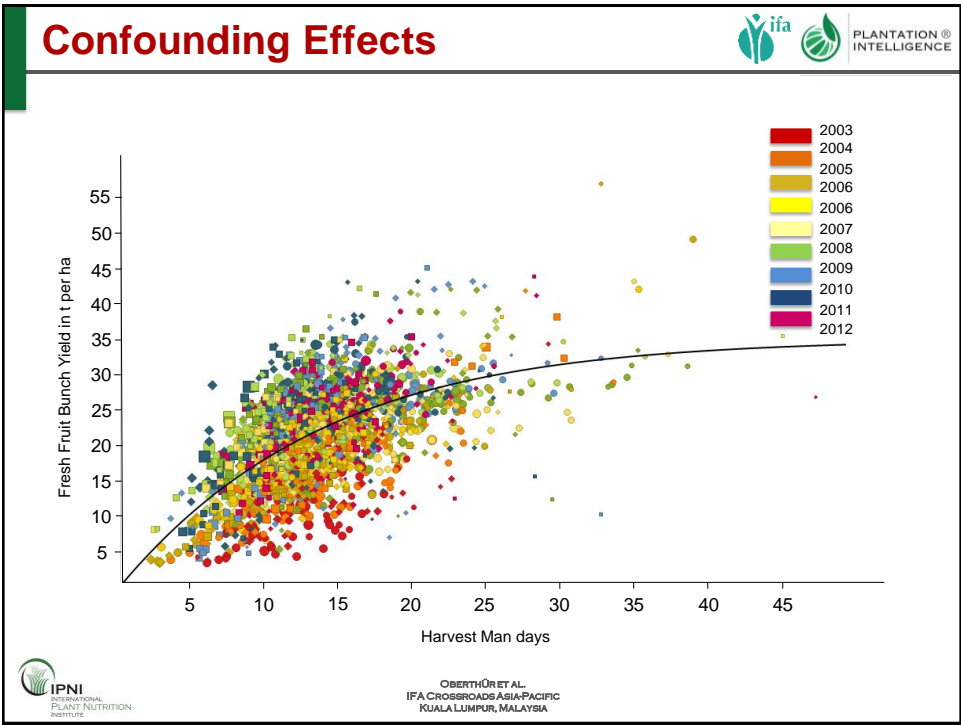

Yield Response (t FFB ha y) = $F_1 (PV_1, PV_2, \dots, PV_N, PV_{NPKMg})$
Yield Response (t FFB ha y) = $F_2 (PV_1, PV_2, \dots, PV_N)$
Response Contrast (t FFB ha y) = $F_2 - F_1$

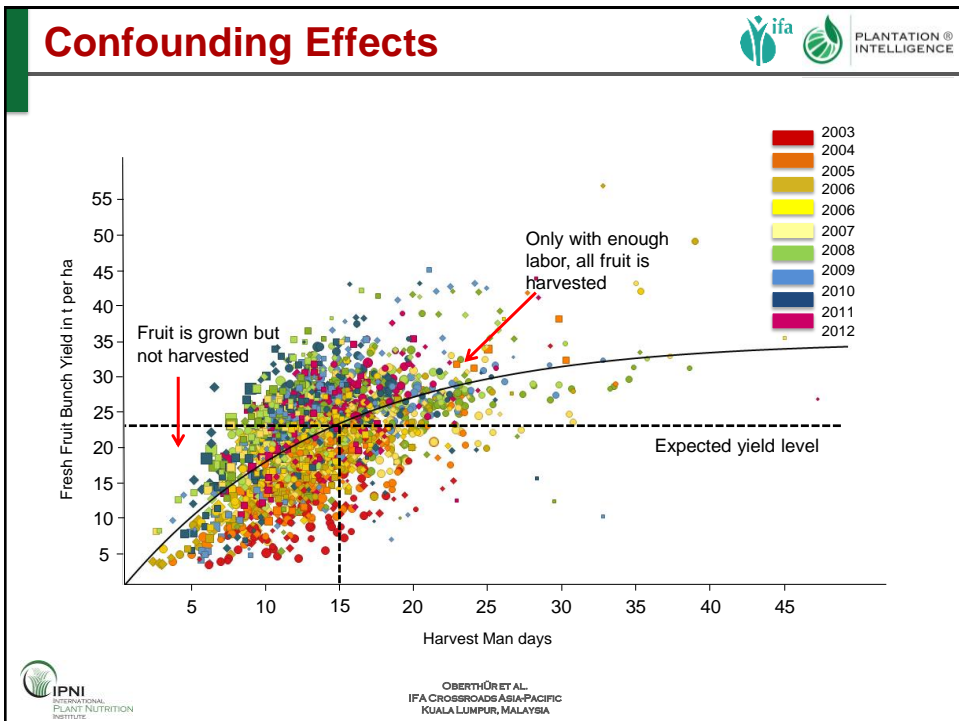
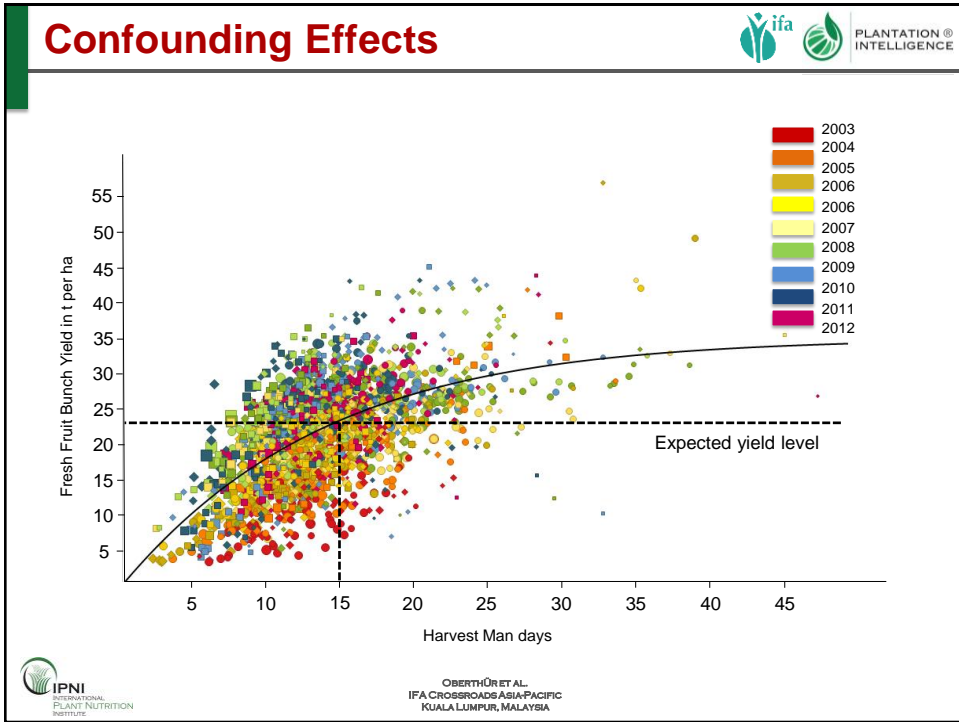


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4 “Disclaimer”






Confounding Effects

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EXPECTATION



Yield Made

vs.

Yield Taken



REALITY

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